

REMARKS

Claims 1-7, 10-16 and 18 are pending in the application. Claims 8, 9 and 17 were previously canceled.

Claims 1 and 18 are amended to recite “where the crosslinking reaction proceeds simultaneously with the kneading of the mixture”. Support can be found, for example, at the bridging paragraph of pages 9-10. No new matter is added.

Entry of the amendment is respectfully requested along with reconsideration and review of the claims on the merits.

Preliminarily, Applicants note that an Information Disclosure Statement with a copy of a Communication from a foreign Patent Office, two references, a PTO/SB/08 (modified) form, a Statement Under 37 C.F.R. § 1.97(e) and a Statement Under 37 C.F.R. § 1.704(d) were filed on April 1, 2004. Applicants respectfully request that the Examiner consider the disclosed information and return an initialized copy of the PTO/SB/08 A & B (modified) form with the next communication from the PTO.

Claim Rejections under 35 U.S.C. § 103(a)

It appears that the previous rejections under 35 U.S.C. § 103(a) citing Ogawa (JP 11-80690) or Creegan et al. (US 3,914,484) as primary references have been withdrawn.

The Examiner has maintained the following rejections from the previous Office Action mailed October 1, 2003.

AMENDMENT UNDER 37 C.F.R. § 1.116

U.S. Application No. 09/742,363

Q62262

A. Claims 1-7 are rejected under 35 U.S.C. 103(a) as assertedly being unpatentable over Sashihara et al. (US 6,251,517) in view of Southwick et al. (US 5,776,998).

The Examiner recognizes that Sashihara does not specifically state that the process of making their pressure sensitive adhesive does not use a solvent. However, the Examiner cites Southwick as teaching processes for making adhesives by shearing a mixture of a photoinitiator and a polymer formulation so that an effectively cured adhesive film is produced and further cites Southwick as teaching that the use of non-aqueous solvents is undesirable because of environmental hazards and the cost of non-aqueous solvent removal.

B. Claims 10-16 and 18 are rejected under 35 U.S.C. 103(a) as assertedly being unpatentable over Sashihara et al. in view of Southwick et al. and Applicants' own admission.

The Examiner recognizes that Sashihara and Southwick do not specifically teach that the PSA composition is applied to a substrate via calendaring or extrusion coating. However, the Examiner cites page 1 of the Specification as stating that it is known to apply a PSA composition on a substrate via a calender roll coater, extruder or the like.

Applicants respond as follows.

Independent Claims 1 and 18 are amended to specify that the crosslinking reaction proceeds simultaneously with the kneading of the mixture. That is, in the present invention, crosslinking is initiated by the physical mixture of components and not by any subsequent UV irradiation step.

In view of the amendment to Claims 1 and 18, Applicants traverse the *prima facie* obviousness rejection, consistent with the arguments presented in the previous response, that the

combination of Sashihara and Southwick fails to achieve the solid type PSA composition or layer of the present invention, assuming *arguendo* that there were proper motivation to combine them, because the product of their combination would still not achieve the present invention. In other words, the combination of Sashihara with Southwick would still not result in a method for producing a solid type PSA composition or PSA sheets of the present invention. Applicants point to the arguments presented against the *prima facie* obviousness rejection in the Amendment filed December 31, 2003, and provide further arguments directed to the following points.

Applicants previously indicated that Southwick's high shear conditions while using a shearing mixer or a sonicator could not be used in preparing Applicants' solid type PSA. Applicants' specification, for comparison, discloses that the rubbery polymer, tackifier, isocyanate crosslinking agent, and any optional ingredients are combined in a mixture which is kneaded with heating without using any organic solvent or water. The mixture is continuously kneaded with heating, whereby the crosslinking agent is evenly dispersed into the mixture being kneaded and, simultaneously therewith, evenly reacted with functional groups having active hydrogen contained in the rubbery polymer, such as hydroxyl or carbonyl groups. As a result, a solid type PSA composition is obtained in which the rubbery polymer has been crosslinked to a considerably low degree (See bridging paragraph of pages 9-10). For the kneading, with heating in a particular temperature range, devices can be used such as a pressure kneader, Banbury mixer, mixing roll mill, or the like, for at least the purpose of preventing thermal deterioration (See page 10, second full paragraph).

However, regarding Southwick's process, Applicants emphasize that an adhesive composition is mixed followed by irradiation with ultraviolet rays to induce a crosslinking reaction. Therefore, as the currently amended Claims 1 and 18 specify that crosslinking occurs simultaneously with such mixture, Applicants point out that Southwick's shearing mixture followed by UV irradiation to initiate a crosslinking reaction does not render obvious the present invention. Furthermore, the present invention has no need for the use of Southwick's subsequent irradiation step.

Furthermore, a skilled artisan would not be motivated to combine Sashihara with Southwick as indicated by the differences in the composition and processes of these two references. Although Southwick may disclose a process for making adhesives using a non-aqueous/solvent free process, Southwick is not combinable with Sashihara to achieve the present invention for the following reasons.

First, Applicants' PSA composition or layer comprises a rubbery polymer, a tackifier, and an isocyanate crosslinking agent combined in a mixture which is kneaded with heating without using any organic solvent or water.

In comparison, Southwick teaches using a non-aqueous solvent free process specifically when a polymer, a tackifier and an *insoluble photoinitiator* are mixed together so that the photoinitiator (seen as distinct phase of droplets of fluid) can be properly dispersed throughout the system (see Southwick, col. 1, lines 40-46 and paragraph bridging cols. 7-8). The insoluble photoinitiator is preferably selected from the group consisting of triaryl sulfonium salts (see paragraph bridging cols. 1-2). Southwick further teaches that the mixture of components is

mixed under *high shear conditions* and/or cavitation followed by a step where the composition is preferably cured by means of ultraviolet or electron-beam radiation (See abstract and paragraph bridging cols. 4-5). Southwick does not disclose the use of an *isocyanate crosslinking agent* according to the present invention.

In comparison, Sashihara teaches the use of polymerization initiators having no cyano groups, where copolymerizable monomers can be polymerized in the presence of the polymerization initiator using heat, light or other energy. Sashihara's Example 1 discloses a mixture of natural rubber, *polymerization initiator* (containing no cyano group), and, e.g., terpene-phenolic resin, specifically dissolved in an aqueous *toluene solvent*. A mixture of n-butyl methacrylate and the polymerization initiator was added to the natural rubber which was already kneaded by a pressure kneader, and then latex polymerization reaction was performed in what appears to be a subsequent step at 80°C for 3 hours (See col. 8, lines 34-44). However, Sashihara's Example 1 contains no *isocyanate crosslinking agent*.

The Examiner also points to Sashihara's Example 2, but Example 2 discloses a mixture of *2-ethylhexyl acrylate*, polymerization initiator, and, e.g., *isocyanate hardening agent* (having three functional groups), specifically in aqueous *toluene solvent* and *ethyl acetate solvent*. The pressure sensitive adhesive components were *polymerized by a solution polymerization method*. To the obtained polymer composition, 4.8 weight parts of a hardening solution (prepared from the hardening components) were added to prepare a coating liquid, which was coated on a plastic film and dried to form a PSA layer (See col. 9, lines 1-26). However, Example 2 contains no rubbery polymer and no tackifier.

Therefore, Applicants emphasize that there is no specific motivation to combine the teachings of Sashihara with Southwick to achieve the present invention. For example, Sashihara's process, and Sashihara's Examples 1 and 2, are so different from that of Southwick that one skilled in the art would not be motivated to combine Sashihara's wet process with the dry, UV radiation process under high shear conditions of Southwick, despite the Examiner's understanding that Southwick teaches that the use of non-aqueous solvents is undesirable because of environmental hazards and the cost of non-aqueous solvent removal. There are too many other distinctions between the two processes that would not motivate one skilled in the art to combine the two references. In other words, neither Sashihara nor Southwick provide proper motivation, absent the teachings disclosed in Applicants' application, for not using a solvent, such as toluene, specifically when an isocyanate compound is mixed with a rubbery polymer and a tackifier.

For the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a).

Conclusion

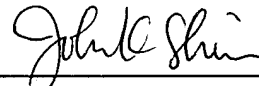
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Q62262

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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